Species Management Report and Plan ADF&G/DWC/SMR&P–2021–29

Delta Caribou Herd Management Report and Plan, Game Management Unit 20A:

Report Period 1 July 2012–30 June 2017 and

Plan Period 1 July 2017–30 June 2022

Anthony L. Hollis

2021

Alaska Department of Fish and Game Division of Wildlife Conservation

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Hunters are important founders of the modern wildlife conservation movement. They, along with trappers and sport shooters, provided funding for this publication through payment of federal taxes on firearms, ammunition, and archery equipment, and through state hunting license and tag fees. These taxes and fees fund the federal Wildlife Restoration Program and the State of Alaska's Fish and Game Fund, which provided funding for the work reported on in this publication.

Species management reports and plans provide information about species that are hunted or trapped and management actions, goals, recommendations for those species, and plans for data collection. Detailed information is prepared for each species every 5 years by the area management biologist for game management units in their areas, who also develops a plan for data collection and species management for the next 5 years. This type of report is not produced for species that are not managed for hunting or trapping or for areas where there is no current or anticipated activity. Unit reports are reviewed and approved for publication by regional management coordinators and are available to the public via the Alaska Department of Fish and Game's public website.

This species management report and plan was reviewed and approved for publication by Doreen Parker McNeill, Management Coordinator for the Division of Wildlife Conservation.

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Please cite this document as follows:

Hollis, A. L. 2021. Delta caribou herd management report and plan, Game Management Unit 20A: Report period 1 July 2012–30 June 2017, and plan period 1 July 2017–30 June 2022. Alaska Department of Fish and Game, Species Management Report and Plan ADF&G/DWC/SMR&P-2021-29, Juneau.

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Purpose of this Report

This report provides a record of survey and inventory management activities for the Delta caribou herd (DCH) in Unit 20A for the previous 5 regulatory years 2012–2017 and plans for survey and inventory management activities in the following 5 regulatory years, 2017–2021. A regulatory year (RY) begins 1 July and ends 30 June (e.g., RY14 = 1 July 2014–30 June 2015). This report is produced primarily to provide agency staff with data and analysis to help guide and record agency efforts but is also provided to the public to inform it of wildlife management activities. In 2016 the Alaska Department of Fish and Game's (ADF&G, the department) Division of Wildlife Conservation (DWC) launched this 5-year report to more efficiently report on trends and to describe potential changes in data collection activities over the next 5 years. It replaces the caribou management reports of survey and inventory activities that were previously produced every 2 years and supersedes the 1976 draft Alaska wildlife management plans (ADF&G 1976).

I. RY12–RY16 Management Report

Management Area

Unit 20A (6,796 mi^2), Central Alaska Range and Tanana Flats. This area consists of the north side of the Alaska Range, east of the Nenana River, west of the Delta River and south of the Tanana River.

Summary of Status, Trend, Management Activities, and History of the Delta Caribou Herd in Unit 20A

The Delta caribou herd (DCH) has historically occupied the foothills of the central Alaska Range between the Parks and Richardson Highways, north of the divide separating the Tanana and Susitna river drainages. In recent years, the herd has also used the upper Nenana and Susitna river drainages, north and south of the Denali Highway. Like other small bands of Alaska Range caribou, the herd drew little attention until population identity studies began in the late 1960s. During the early to mid-1980s, the department recognized a small group of caribou in the Yanert drainage as a separate herd. The growing Delta herd eventually mixed with the Yanert herd, and after 1986, the Yanert caribou adopted the movement patterns of the larger herd (Valkenburg et al. 1988).

By the mid-1970s DCH rose from anonymity to a herd of local and scientific importance. Its proximity to Fairbanks, Alaska and good access made it popular with hunters from Fairbanks. For the same reasons, it has been the subject of intensive management and research. Long-term studies of caribou population dynamics, ecology, and predator-prey relationships resulted in numerous publications and reports. Boertje et al. (1996) and Valkenburg et al. (1996, 2002) provide summaries and citations.

Estimated at 1,500–2,500 in 1975, the herd had grown to a peak of nearly 11,000 by 1989. It declined sharply in the early 1990s, as did other central Alaska Range herds, to less than 4,000.

Valkenburg et al. (1996) present a detailed analysis of the decline. The herd continued a slow decline and dropped to less than 3,000 animals by the early 2000s.

Since statehood in 1959, 2 wolf control programs have been conducted in Unit 20A. During 1976–1982, state biologists killed wolves from helicopters to increase moose numbers and harvest. Boertje et al. (1996) summarized the influence of this program on moose, caribou, and wolves. From October 1993 to December 1994, state biologists and the public reduced wolf numbers by trapping to halt the decline of DCH. This ground-based predation control program was terminated amid considerable controversy. Valkenburg et al. (2002) summarized the effects of this program on DCH. Research and enhancement of Delta caribou became a regional priority through the late 1990s. The department initiated an experimental diversionary feeding program in 1996 to determine whether wolves can be diverted from calving areas during the peak of calving. The project was intended to evaluate the feasibility of this technique for increasing neonate survival (Valkenburg et al. 2002).

Caribou harvest and harvest regulations have varied widely due to population fluctuations and strong hunter interest. The Alaska Board of Game (board) suspended hunting of DCH in 1992 in response to declining numbers, and the herd remained closed to hunting through regulatory year 1995. Hunts have been conducted by drawing permit for bull caribou only since the hunt was resumed in RY96.

Management Direction

Existing Wildlife Management Plans

A caribou management plan for the DCH is found in the 2013 caribou management survey and inventory report for the Delta caribou herd (Young 2013).

Goals

Since the mid-1970s, goals for DCH have included providing high-quality hunts, high harvests, and trophy caribou. The decline of the herd since 1989 gave impetus to the current management goals of restoring the herd and resuming a higher level of consumptive use. The current management objectives are defined in the intensive management regulation (Title 5 of the Alaska Administrative Code, regulation 92.108; 5 AAC 92.108).

Codified Objectives

Amounts Reasonably Necessary for Subsistence Uses

Under 5 AAC 99.025, customary and traditional uses of game populations, DCH is not listed. Therefore, the DCH does not have a positive finding for customary and traditional uses and there is no amount designated for this herd as reasonably necessary for subsistence uses.

Intensive Management

C1. The intensive management population objective is 5,000–7,000 caribou.

C2. The intensive management harvest objective is 300–700 caribou.

MANAGEMENT OBJECTIVES

M1. Maintain a fall bull-to-cow ratio of ≥30:100 and a large bull-to-cow ratio of ≥6:100.

M2. Reverse the decline of the herd and increase the midsummer population to 5,000–7,000 caribou (i.e., intensive management population objective).

M3. Sustain an annual harvest of 300–700 caribou (i.e., intensive management harvest objective).

MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct a photocensus to obtain a minimum count.

Data Needs

A photocensus is the best way to obtain a minimum count of the Delta caribou herd. A minimum count provides information needed to monitor long-term population trends and an indication of the number of animals available for harvest.

Methods

A photocensus is conducted in mid-summer (late June/early July) if environmental conditions are favorable (hot temperatures and lots of insects at high altitudes) which forces the majority of the caribou herd to aggregate in large groups. These groups are located with the use of a fix-winged aircraft outfitted with radiotelemetry equipment. When these large groups of caribou are found, they are photographed from a larger fixed-wing aircraft (either DeHavilland Beaver or Cessna 206) outfitted with a camera on the belly of the aircraft. Large transects are flown over the groups of caribou and photos are taken from the aircraft. The photos are later analyzed and caribou are counted from the photos. Small herd of caribou (less than 100 animals) may be photographed with a standard digital handheld camera; caribou are counted from these photos.

Results and Discussion

DCH declined from more than 10,000 animals in 1989 to less than 4,000 in 1993. The decline resulted from interrelated effects of adverse weather and predation and also occurred in neighboring herds (Valkenburg et al. 1996). However, DCH declined more than the neighboring Denali and Macomb herds. DCH had existed at a much higher density than Denali and Macomb herds, indicating that density-dependent food limitation may have influenced the magnitude of the decline (Valkenburg et al. 1996). Since that decline, the abundance and trajectory of the herd have been difficult to discern because estimates of herd size and recruitment have varied considerably. Survey data indicated that the herd increased slightly in 1994 and 1995, but subsequent data indicated a declining trend for 1994 and 1995 (Eagan 1995). The minimum herd size declined from 4,646 caribou in 1995 to 2,211 caribou in 2004 . Weather precluded completion of a census in 2005 and 2006. By 2007 the herd increased to approximately 2,985 caribou, an increase of 774 caribou ($\lambda = 1.11$) from the 2004 census. During 2011, the last year

in which a photocensus was conducted, a minimum count of 2,067 caribou were counted in Unit 20A.

Due to unfavorable weather, and because the herd did not aggregate, we were unable to complete a photocensus-based abundance estimate for DCH during RY13–RY16. Proper environmental conditions for DCH to aggregate into groups large enough for a photocensus have been rare over the last 5 years. Also, conducting a photocensus of DCH produces marginal results due to mixing with the Nelchina Caribou herd and immigration/emigration from Unit 20A into Unit 13. A photocensus gives the department a snapshot of the number of caribou in Unit 20A during a given point in time but may not reflect the number of caribou that will be available for hunters to harvest during the fall hunting season. A successful photocensus does allow the department to understand the number of caribou that are in Unit 20A during late June or July.

Recommendations for Activity 1.1

Continue periodic photocensuses of DCH when weather permits and conflicts do not arise in conducting photocensuses for other herds, particularly larger or more important herds.

ACTIVITY 1.2. Conduct composition surveys during the fall season.

Data Needs

Composition surveys were conducted to assess the management objectives and ensure the herd is not being overharvested (objective M1). Composition data was also used to determine annual recruitment potential using calf:100 cow ratios.

Methods

ADF&G biologists conducted composition surveys in early October using an R-44 helicopter and Bellanca Scout or Piper PA-18 fixed-wing aircraft. The biologist in the fixed-wing aircraft located the radiocollared caribou. Another biologist in the R-44 helicopter classified caribou that were in groups with radiocollared animals, and also classified any other caribou found in an additional search of the surrounding area. We searched areas that contained the majority of the radiocollared caribou (i.e., the Yanert and Upper Wood river drainages, the Gold King Benches, and the Little Delta River and Delta Creek drainages) and also classified caribou that were encountered while in transit between search areas. We assumed that bulls and cows were thoroughly mixed since surveys were conducted during the month of the rut. Classification categories consisted of cows; calves; and small (juvenile), medium (subadult), and large (mature adult) bulls. Observers identified bulls by the absence of vulva and classified bulls by antler characteristics (Eagan 1993). We tallied the composition of each group on a 5-position counter and recorded the tallies on a datasheet.

Results and Discussion

Bull-to-cow ratios have varied considerably since 1990, ranging from 24:100 to 67:100, but have remained above 30:100 (Table 1). The ratio of large bulls:100 cows improved once the steep

Table 1. Delta caribou fall composition counts, 1989–2017, Unit 20A, Alaska.

Survey date	Bulls:100 cows	Large bulls: 100 cows	Calves: 100 cows	% Calves	% Cows	% Bulls	Small bulls %	Medium bulls %	Large bulls %	Composition sample size
Average 1983–1989	37	9	36	21	58	21	51	26	23	1,721
Average 1990–1999	32	8	16	11	68	22	43	32	25	1,591
Average 2000–2009	44	11	23	13	60	27	36	38	26	1,019
3 Oct 2010	61	16	28	15	53	33	43	31	26	1,244
3 Oct 2011	67	21	30	15	51	34	36	34	31	926
3 Oct 2012	51	18	15	9	60	31	32	32	36	787
10 Oct 2013	38	11	10	7	68	26	47	25	29	383
19 Oct 2014	39	11	17	11	64	25	29	42	29	622
26 Oct 2015	41	10	28	17	59	24	19	58	23	928
11 Oct 2016	38	13	27	16	60	23	39	25	35	493
11 Oct 2017	48	16	25	14	58	28	36	31	33	513

population decline ended in 1993; 2012 had the highest ratio (36:100). During RY13–RY16 the large bull:100 cow ratio has remained high except during 2015. These ratios imply that current harvest rates are sustainable. Most of the short-term fluctuation in bull-to-cow ratios is probably a result of variable behavior and distribution of bulls during counts (i.e., sampling variance rather than process variance). Weather can affect herd distribution, movements, and behavior during rut counts, and survey timing relative to rut can affect the degree of sexual segregation.

In general, calf-to-cow ratios were relatively low and declining through the early 2000s (Table 1). Ratios in 2013 were the lowest observed since 1993 but improved during 2015–2017. Calf mortality studies during 1995–1997 indicated that these low calf-to-cow ratios were primarily the result of predation by wolves, grizzly bears, and golden eagles (Valkenburg et al. 2002). Analysis of fecal samples collected in late winter of 1989 and 1993 indicated depletion of lichen in the foothills of the Alaska range in Unit 20A (Valkenburg 1997, Valkenburg et al. 2002). The proportion of lichens in the diet was relatively low, and the proportion of mosses was high compared to caribou from other Interior herds (Valkenburg et al. 2002). Moderately strong calf-to-cow ratios during 2004–2011 ($\bar{x}$ = 27.6) indicate that the herd was probably stable or increasing during that period. However, weak calf-to-cow ratios ($\bar{x}$ = 13.9; 2012–2014) along with lower bull-to-cow ($\bar{x}$ = 38; 2013–2014) and large bull-to-cow ratios ($\bar{x}$ = 11; 2013–2014) suggest that the population may have declined during 2012–2014. During 2015–2017, calf-to-cow ratios indicate that the DCH population may be either stable or increasing.

Recommendations for Activity 1.2

Continue conducting fall composition counts of the DCH to ensure that harvest is not reducing the bull:cow ratio below the management objectives.

ACTIVITY 1.3. Monitor the distribution and movements of the Delta caribou herd.

Data Needs

Monitoring herd distribution and movements provides supporting information for other activities such as population and composition surveys. For example, a 10-month-old female caribou calf captured in April was able to be weighed for comparison with previous weights for DCH (Valkenburg et al. 2002) to assess nutritional status of the herd.

Methods

During either March or April, a search of the herd's home range using a PA-18 Super cub equipped with radiotracking equipment was conducted to locate either random groups of uncollared caribou or groups with an existing radiocollared animal in the group. The animals targeted were approximately 10-month-old calves. The calves were immobilized from an R-44 helicopter with the use of a Pneu-dart Inc. dart containing 1.5 mg Carfentanil and 20 mg Xylazine (1 cc dose). Reversal drugs Naltrexone (150 mg) and Tolazoline (200 mg) were used to reverse effects of immobilization. While immobilized, animals were weighed and fitted with very high frequency (VHF) radio collars. After each animal was injected with the reversal drugs, they were monitored until they recovered and left the capture site.

Results and Discussion

Weights of 10-month-old females during 2013–2015 ($\bar{x}$ = 53.8 kg) were similar to weights during 1995–2007 ($\bar{x}$ = 55.7 kg; Table 2), suggesting that nutritional status has not improved measurably since the population began to decline in the early 1990s. No caribou captures were conducted during 2016 and 2017; therefore, no calf weights are available for those years.

Recommendations for Activity 1.3

Continue. Data provides a metric that measures nutritional status of DCH caribou.

Table 2. Mean weight of samples of 10-month-old female calves from the Delta caribou herd, 1979–2015, Unit 20D, Alaska.

Year	$\bar{x}$ (lb)	$\bar{x}$ (kg)	$s_{\bar{x}}$ (lb)[a]	*n*
1979	132.3	60.1	2.4	11
1981	137.0	62.1	7.4	5
1982	135.1	61.3	3.9	11
1983	137.2	62.2	3.3	13
1984	126.9	57.5	1.3	14
1987	120.8	54.8	2.8	9
1988	131.3	59.6	2.9	12
1989	133.6	60.6	2.7	9
1990	119.9	54.4	3.3	9
1991	113.1	51.3	2.3	9
1992	119.1	54.0	2.6	17
1993	122.3	55.5	2.9	12
1995	123.1	55.8	2.7	15
1996	120.8	54.8	3.3	15
1997	118.3	53.7	2.5	14
1998	123.7	56.1	3.0	12
1999	116.7	52.9	2.6	13
2000	114.9	52.1	2.6	12
2001	122.2	55.4	3.1	11
2002	130.0	59.0	2.0	15
2003	117.5	53.3	3.5	15
2004	129.4	58.6	3.7	14
2005	127.2	57.7	3.7	14
2007	121.7	55.3	3.5	11
2008	132.2	60.1	2.4	11
2010	120.9	54.8	1.8	7
2011	120.0	54.4	2.5	14
2013	125.8	57.1	4.2	10
2014	112.2	50.9	6.4	9
2015	115.4	52.3	3.6	5

Note: Years 1979–2001 (Valkenburg et al. 2002); Years 2002–2008 (Valkenburg et al. 2016). Missing years represent no data due to inadequate sample size when there were too few 10-month-old calves captured.

[a] *s* represents the standard deviation of the sample.

2. Mortality-Harvest Monitoring and Regulations

ACTIVITY 2.1. Monitor hunter harvest and effort.

Data Needs

Monitoring hunter harvest and effort annually is necessary to document the human caused mortality of DCH to ensure that these caribou are not overharvested, and to provide opportunity for an increase in harvest when appropriate.

Methods

ADF&G staff monitored harvest characteristics through drawing permit hunt reports and summarized harvest data by regulatory year. Data received from the drawing permit harvest reports were archived in ADF&G's internal Wildlife Information Network (WinfoNet). This information contains the number of hunters that drew a permit, harvest, effort, residency, and type of transportation used.

Season and Bag Limit

Unit 20A bag limit and seasons by residency for regulatory years 2012 through 2016, Delta caribou herd, Alaska.

Bag limit	Resident open season	Nonresident open season
1 bull by drawing permit only; up to 200 permits may be issued.	10 Aug–20 Sep	10 Aug–20 Sep

Results and Discussion

Harvest by Hunters

During RY12–RY16 the average harvest from the DCH was 51 caribou and the range was 44–62 caribou annually. This was slightly lower than the average harvest of 55 caribou from RY07–RY11 (Table 3).

Permit Hunts

We issued 75 permits annually in RY96 and RY97, 100 permits annually during RY98–RY03, and 150 permits annually during RY04–RY17. Since RY09 the percentage of permittees who did not hunt (30–46%) has been relatively high but consistent (Table 3). Similarly, success rates of those who hunted have been consistently high at ≥44% since RY04 when the department began issuing 150 permits annually. The relatively low hunter participation, especially for a drawing permit hunt, was probably a function of the majority of the herd being distributed across the eastern and central portions of its range, which is relatively inaccessible compared to the western portion, where access by all-terrain vehicles is better.

Table 3. Delta caribou harvest data by permit hunt DC827, regulatory years 2009–2016, Unit 20A, Alaska.

Hunt	Regulatory year	Permits issued	Did not hunt (%)	Unsuccessful hunters (%)	Successful hunters (%)	Bulls (%)	Cows (%)	Unk (%)	Harvest
DC827	2009	150	49 (33)	51 (50)	50 (50)	50 (100)	0 (0)	0 (0)	50
	2010	150	67 (45)	31 (37)	52 (63)	52 (100)	0 (0)	0 (0)	52
	2011[a]	151	45 (30)	36 (34)	70 (66)	70 (100)	0 (0)	0 (0)	70
	2012	150	67 (45)	37 (45)	46 (55)	45 (98)	0 (0)	1 (2)	46
	2013[b]	152	55 (36)	35 (36)	62 (64)	62 (100)	0 (0)	0 (0)	62
	2014	150	62 (41)	40 (45)	48 (55)	48 (100)	1[c] (0)	0 (0)	48
	2015	150	69 (46)	37 (46)	44 (54)	44 (100)	0 (0)	0 (0)	44
	2016	150	63 (42)	34 (39)	53 (61)	53 (100)	0 (0)	0 (0)	53

[a] Includes one SC827 permit that did not hunt.
[b] Two permits reissued/transferred for active-duty military personnel deployed to combat zone.
[c] Illegal take not included in harvest, bulls only hunt.

Hunter Residency and Success

Beginning in RY02, harvest by nonlocal Alaska resident and nonresident hunters (22 caribou) surpassed that of local residents (15 caribou) for the first time since the hunt began in RY96 (Young 2007). During RY03–RY07, harvest between the 2 groups equalized with an average of 20 caribou taken by nonlocal resident and nonresident hunters and an average of 20 taken by local resident hunters (Seaton 2009). In RY08–RY09, again nonlocal residents and nonresidents harvested more caribou ($\bar{x}$ = 28) than locals ($\bar{x}$ = 19; Table 4; Young 2013). This trend continued through RY10 (34 versus 18), but not RY11 (31 nonlocal and nonresident versus 39 local hunters) or RY12 (22 versus 24). In RY13–RY15, again nonlocal residents and nonresidents harvested more caribou than local hunters, but residents harvested more in RY16. The success rates of nonresident hunters have typically been higher than that of resident hunters in this hunt (Young 2007; Seaton 2009, 2011). A likely explanation might be that nonresidents were more inclined to participate in guided hunts, which typically have higher success rates than nonguided hunts preferred by resident hunters.

Transport Methods

Successful hunters (RY12–RY16) primarily used 3- or 4-wheelers ($\bar{x}$ = 47%) and aircraft ($\bar{x}$ = 30%) to harvest caribou (Table 5). The remaining hunters ($\bar{x}$ = 20%) used other modes of transportation, including horses, boats, other off-road vehicles, and highway vehicles (Table 5).

Other Mortality

ADF&G research staff conducted calf mortality studies during 1995–1997 and found that wolves, grizzly bears, and eagles were primary predators of caribou in Unit 20A. Details of causes and trends in calf and adult mortality are in ADF&G research reports and publications (Davis et al. 1991, Boertje et al. 1996, Valkenburg et al. 1996, Valkenburg et al. 2002). Calf and adult survival were poor during the population decline; consequently, in the early 1990s the board adopted a wolf predation control implementation plan in Unit 20A to reduce wolf numbers to rebuild the caribou population. The wolf predation control plan was no longer in use after 1994. In addition, Valkenburg (1997) and Valkenburg et al. (2002) tested a diversionary feeding program that addressed predation by a wolf pack in the Wells Creek area. They concluded that diversionary feeding of wolves near caribou calving areas could successfully reduce predation in some circumstances, but it has significant limitations, primarily because wolves continue to hunt even when they are not hungry.

Alaska Board of Game Actions and Emergency Orders

In March of 2017, the Alaska Board of Game determined that DCH no longer met the criteria for intensive management. Because of this negative finding, the herd no longer has an intensive management population or harvest objective set by the board.

Recommendations for Activity 2.1

Continue to collect harvest information to remain informed regarding harvest, effort, and success rates.

Table 4. Delta caribou annual hunter residency and success, permit hunt DC827, regulatory years 2009–2016, Unit 20A, Alaska.

Regulatory year	Successful					Unsuccessful					Total hunters
	Local[a] resident	Nonlocal resident	Nonresident	Total	(%)	Local[a] resident	Nonlocal resident	Nonresident	Total	(%)	
2009	17	25	8	50	(50)	26	24	1	51	(50)	101
2010	18	28	6	52	(63)	11	16	4	31	(37)	83
2011	39	25	6	70	(67)	16	18	1	35	(33)	105
2012	24	17	5	46	(59)	21	11	0	32	(41)	78
2013	22	28	11	61[c]	(63)	14	19	2	35	(36)	96[b]
2014	14	30	5	49	(55)	17	17	6	40	(45)	89
2015	21	14	9	44	(54)	22	15	0	37	(46)	81
2016	30	18	5	53	(61)	18	14	2	34	(39)	87

[a] Residents of Unit 20.
[b] Does not include 1 unknown.

Table 5. Delta caribou harvest percent by transport method, permit hunt DC827, regulatory years 2009–2016, Alaska.

Regulatory year	Harvest percent by transport method							
	Airplane	Horse	Boat	3- or 4-Wheeler	ORV[a]	Highway vehicle	Unknown	*n*
2009	32	4	4	48	2	10	0	50
2010	31	4	0	56	4	6	0	52
2011	34	10	1	39	4	10	1	70
2012	28	4	0	57	9	2	0	46
2013	29	11	3	35	10	11	0	62
2014	37	6	0	51	0	6	0	49
2015	20	9	2	48	9	9	3	44
2016	38	2	0	45	9	6	0	53

[a] ORV represents other off-road vehicles.

3. Habitat Assessment-Enhancement

None.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- Harvest data are stored on an internal database housed on ADF&G's Wildlife Information Network (WinfoNet) server (http://winfonet.alaska.gov/index.cfm) and archived in WinfoNet under Harvest Information and Survey and Inventory Tools.

- All other electronic files such as survey memoranda, reports, and maps are located on the Fairbanks server (S:\Fairbanks_Area\Caribou).

- All hard copies of field capture cards, memoranda, and reports are stored in office 118 filing cabinets. Field capture cards were scanned and stored, along with electronic copies of memoranda and reports, on the S drive in Fairbanks under "Fairbanks Area" and also in WinfoNet data archives.

Agreements

None.

Permitting

None.

Conclusions and Management Recommendations

We did not meet intensive management objectives of 5,000 to 7,000 caribou or an annual harvest of 300–700 caribou. However, because the BOG determined in March of 2017 that this herd did not meet the criteria as an intensive management herd, we no longer have IM objectives to meet and will not have them in the future as management objectives. These IM objectives were a portion of the goals that we used for managing this herd. Since they no longer exist, we have to modify the goals for the next report period. The new goal will be to manage the DCH to provide opportunity to harvest caribou on a sustainable basis, have high quality hunts and opportunity to harvest a trophy caribou. Although IM population and harvest objectives no longer exist, the new goals have been used since the 1970s.

We met the objective to maintain 30 bulls:100 cows and 6 large bulls:100 cows. In March 2004, the board authorized an increase to 200 drawing permits for hunt DC827 because harvest of bulls had been below the recommended allowable harvest of 2–3% annually. Harvest rates averaged 2.6% during RY12–RY16, based on the average harvest of 51 bulls and an estimate of about 2,000 caribou in Unit 20A. The proportion of large bulls in the population has remained high, which allowed us to meet our trophy management goal. We will continue to monitor sex ratios during fall surveys to ensure that management objectives concerning bull-to-cow ratios continue

to be met. This will allow the department to determine the number of drawing permits to issue annually to help control the harvest.

The mixing of Delta and Nelchina herd caribou poses a significant management challenge. At this juncture, we have not been able to identify any specific pattern to their movements or mixing. As a result, we have begun to use hunt boundaries, rather than calving distribution, to define herd membership. We chose to draw the line at the Unit 20A/13E boundary so that the population estimate area matches the areas designated during the hunting seasons. Due to this mixing and caribou immigrating and emigrating to and from the area, determining the population size continues to be a challenge.

II. Project Review and RY17–RY21 Plan

Review of Management Direction

MANAGEMENT DIRECTION

GOALS

Manage Delta caribou herd (DCH) to provide the opportunity to harvest caribou on a sustainable basis, harvest a trophy caribou, and participate in high-quality hunts. This has changed because BOG determined that this herd did not meet the criteria as an intensive management herd; therefore, there are no longer IM objectives and therefore will not have them in the future as management objectives. These IM objectives were a portion of the goals that we used for managing this herd. Since they no longer exist, we have to modify the goals for the next report period. The new goal will be to manage DCH to provide opportunity to harvest caribou on a sustainable basis, have high quality hunts, and an opportunity to harvest a trophy caribou. Although IM population and harvest objectives no longer exist, the new goals have been used since the 1970s.

CODIFIED OBJECTIVES

Amounts Reasonably Necessary for Subsistence Uses

Under 5 AAC 99.025 customary and traditional uses of game populations, DCH is not listed. Therefore, the DCH does not have a positive finding for customary and traditional uses and there is no amount designated for this herd as reasonably necessary for subsistence uses.

Intensive Management

None.

MANAGEMENT OBJECTIVES

M1. Maintain a fall bull-to-cow ratio of ≥30:100 and a large bull-to-cow ratio of ≥6:100.

REVIEW OF MANAGEMENT ACTIVITIES

1. Population Status and Trend

ACTIVITY 1.1. Conduct a photocensus to obtain a minimum count.

Data Needs

A photocensus is the best way to obtain a minimum count of the Delta Caribou herd. A minimum count provides information needed to monitor long-term population trends and an indication of the number of animals available for harvest.

Methods

A photocensus is conducted in mid-summer (late June, early July) if environmental conditions are favorable (hot temperatures and lots of insects at high altitudes) which forces the majority of the caribou herd to aggregate in large groups. These groups will be located with the use of a fix-winged aircraft outfitted with radiotelemetry equipment used to search for radiocollared caribou. When these large groups of caribou are found, they will be photographed from a larger fixed-wing aircraft (DeHavilland Beaver or Cessna 206) which is outfitted with a camera on the belly of the aircraft. Large transects will be flown over groups of caribou and photos will be taken from the aircraft. Photos will be analyzed afterwards, and caribou will be counted from these photos. Small groups of caribou (less than 100 animals) may be photographed with a standard digital handheld camera; caribou will also be counted from these photos.

ACTIVITY 1.2. Conduct composition surveys during the fall season.

Data Needs

Composition surveys will be conducted to assess the management objectives of a bull-to-cow ratio of 30:100 and a large bull-to-cow ratio of ≥6:100 for DCH. Composition data will also be used to determine annual recruitment potential using calf:100 cow ratios.

Methods

We will conduct composition surveys in early October using an R-44 helicopter and Bellanca Scout or Piper PA-18 fixed-wing aircraft. The biologist in the fixed-wing aircraft will locate radiocollared caribou. Another biologist in the R-44 helicopter will classify caribou that are in groups with radiocollared caribou and also classify any caribou found in a search of the surrounding area. We will search areas containing the majority of the radiocollared caribou (i.e., the Yanert and Upper Wood river drainages, the Gold King Benches, and the Little Delta River and Delta Creek drainages) and also classify caribou encountered while in transit between search areas. We will assume that bulls and cows are thoroughly mixed since surveys will be conducted during the month of rut. Classification categories consist of cows; calves; and small (juvenile), medium (subadult), and large (mature adult) bulls. Observers will identify bulls by the absence of vulva and classify bulls by antler characteristics (Eagan 1993). We will tally the composition of each group on a 5-position counter and record tallies on a datasheet.

ACTIVITY 1.3. Monitor distribution and movements of the Delta caribou herd.

Data Needs

Our objective is to maintain a sample of 30–40 radiocollared female caribou to monitor distribution and movements and aid in conducting population estimation and composition surveys. Radiocollared caribou are relocated annually, and if funding is available, they will be relocated more regularly. We will capture 10-month-old female caribou in April, weigh them, and use these weights to assess the nutritional status of the herd by comparing them to previous weights of 10-month-old female caribou from DCH (Valkenburg et al. 2002).

Methods

To radiocollar caribou, first a search of the DCH home range is conducted with a PA-18 Super cub aircraft in March or April. The aircraft is equipped with radiotracking equipment which is used to locate either random groups of caribou or groups with an existing radiocollared animal in the group. The animals targeted are approximately 10-month-old calves. The calves are chased down using an R-44 helicopter and immobilized with the use of a dart containing a drug cocktail of 1.5 mg Carfentanil and 20 mg xylazine in a 1 cc dose. Naltrexone (150 mg) and Tolazoline (200 mg) are also used to reverse effects of the immobilization drugs. While immobilized, the animals are weighed and fitted with a VHF radiocollar. After injecting them with the reversal drug, animals are monitored until they recover and leave the capture location.

2. Mortality-Harvest Monitoring

ACTIVITY 2.1. Monitor hunter harvest and effort.

Data Needs

Monitoring hunter harvest and effort annually is necessary to document the human-caused mortality of DCH.

Methods

We will monitor harvest characteristics through drawing-permit hunt reports and summarized harvest data by regulatory year.

3. Habitat Assessment-Enhancement

None.

NONREGULATORY MANAGEMENT PROBLEMS OR NEEDS

Data Recording and Archiving

- Harvest data are stored on an internal database housed on ADF&G's Wildlife Information Network (WinfoNet) server (http://winfonet.alaska.gov/index.cfm) and archived in WinfoNet under Harvest Information and Survey and Inventory Tools.

- All other electronic files such as survey memoranda, reports, and maps are located on the Fairbanks server (S:\Fairbanks_Area\Caribou).

- All hard copies of field capture cards, memoranda, and reports are stored in office 118 filing cabinets. Field capture cards were scanned and stored, along with electronic copies of memoranda and reports on the S: drive in Fairbanks under "Fairbanks Area" and in WinfoNet data archives.

Agreements

None.

Permitting

None.

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